

Listing of Claims:

1. (Currently Amended) A pressure sensor device comprising:
a thin diaphragm made of brittle material, in which a strain
resistance gauge is formed in a surface thereof; and

5 a stopper member including a concave portion ~~made up of~~
comprising a curved surface parallel to a surface formed by
displacement of said diaphragm, said concave portion being
disposed so as to face said diaphragm.

2. (Currently Amended) The pressure sensor device according
to claim 1, further comprising another said stopper member,
wherein the stopper members are so disposed so as to face both
respective sides of said diaphragm.

3. (Currently Amended) The pressure sensor device according
to claim 1, wherein the curved surface of the concave portion in
~~each of~~ said stopper ~~members~~ member is formed into a curved
surface in which when the diaphragm has a radius of r , a
5 thickness of t , and a flexural rigidity of D , depth y at a
distance x from ~~the~~ a center of said diaphragm in relation to
operating pressure for protection against maximum pressure p is
expressed by a quartic function:

$$y = pr^4(1-x^2/r^2)^2/64D$$

10 $D=Et^3/12(1-v^2)$

where E is Young's modulus, and v is Poisson's ratio.

4. (Currently Amended) The pressure sensor device according to claim 1, wherein each of said stopper members has member comprises a leading hole of for a pressure-transmitting medium to be led to said diaphragm in a top portion of the concave portion 5 forming having the curved surface parallel to the surface formed by displacement of said diaphragm.

5. (Currently Amended) A pressure sensor device comprising: a diaphragm in which a strain resistance gauge is formed in a surface;

a pair of stopper members having respective concave portions 5 in the shape of curved surfaces parallel to surfaces formed by displacement of said diaphragm, the stopper members being disposed in both at respective sides of said diaphragm so that said concave portions face said diaphragm; and

10 a base having fluid paths that lead a pressure-transmitting medium from top portions of said concave portions in said stopper members to both sides of said diaphragm and a pair of pressure-receiving portions connected to said respective fluid paths to transmit pressure to the pressure-transmitting medium injected into said fluid paths.

6. (Currently Amended) The pressure sensor device according to claim 5, wherein a sensor chip, which is formed of said

diaphragm and said pair of stopper members, is are fixed to said base with a pressure-absorbing body interposed therebetween.

7. (Currently Amended) The pressure sensor device according to claim 5, wherein said pair of pressure-receiving portions ~~is formed of~~ comprises a pair of diaphragms provided to the base.

8. (Currently Amended) The pressure sensor device according to claim 2, wherein the curved surface of the concave portion in each of said stopper members is formed into a curved surface in which when the diaphragm has a radius of r , a thickness of t , and 5 a flexural rigidity of D , depth y at a distance x from the center of said diaphragm in relation to operating pressure for protection against maximum pressure p is expressed by a quartic function:

$$y = pr^4(1-x^2/r^2)^2/64D$$

10 $D=Et^3/12(1-v^2)$

where E is Young's modulus, and v is Poisson's ratio.

9. (Currently Amended) The pressure sensor device according to claim 2, wherein each of said stopper members ~~has~~ comprises a leading hole ~~of~~ for a pressure-transmitting medium to be led to said diaphragm in a top portion of the concave portion forming 5 having the curved surface parallel to the surface formed by displacement of said diaphragm.